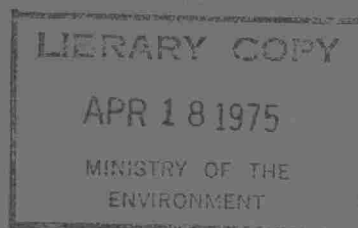


OPERATING SUMMARY

ROCKLAND

WATER TREATMENT PLANT and
WATER POLLUTION CONTROL PLANT

LABORATORY & RECEPTION DIVISION
MINISTRY OF THE ENVIRONMENT



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MANAGER, UTILITY OPERATIONS
A. Symmonds

ROCKLAND

WATER TREATMENT PLANT

and

WATER POLLUTION CONTROL PLANT

MINISTRY OF THE ENVIRONMENT

1973 ANNUAL OPERATING SUMMARY

prepared by
Plant Performance Unit
TECHNICAL SERVICES BRANCH
T. Cross, Director

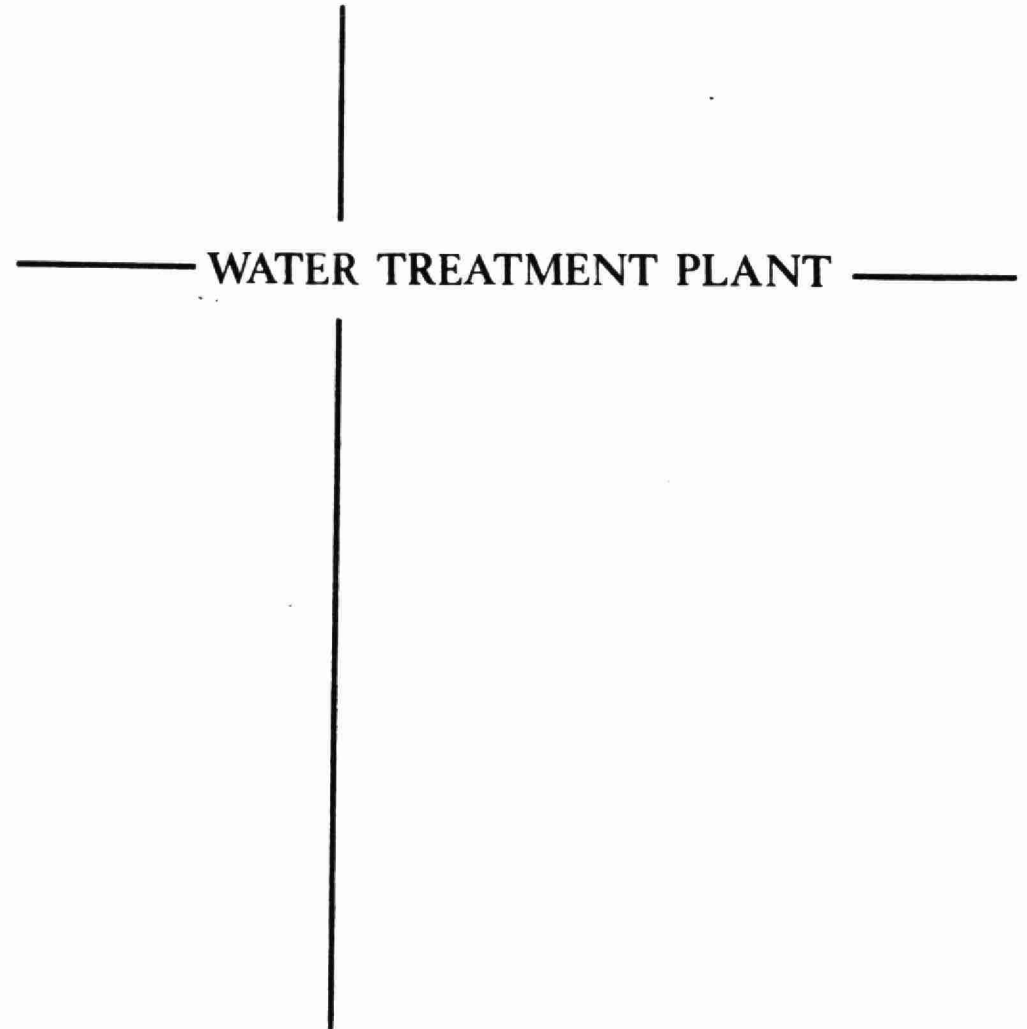
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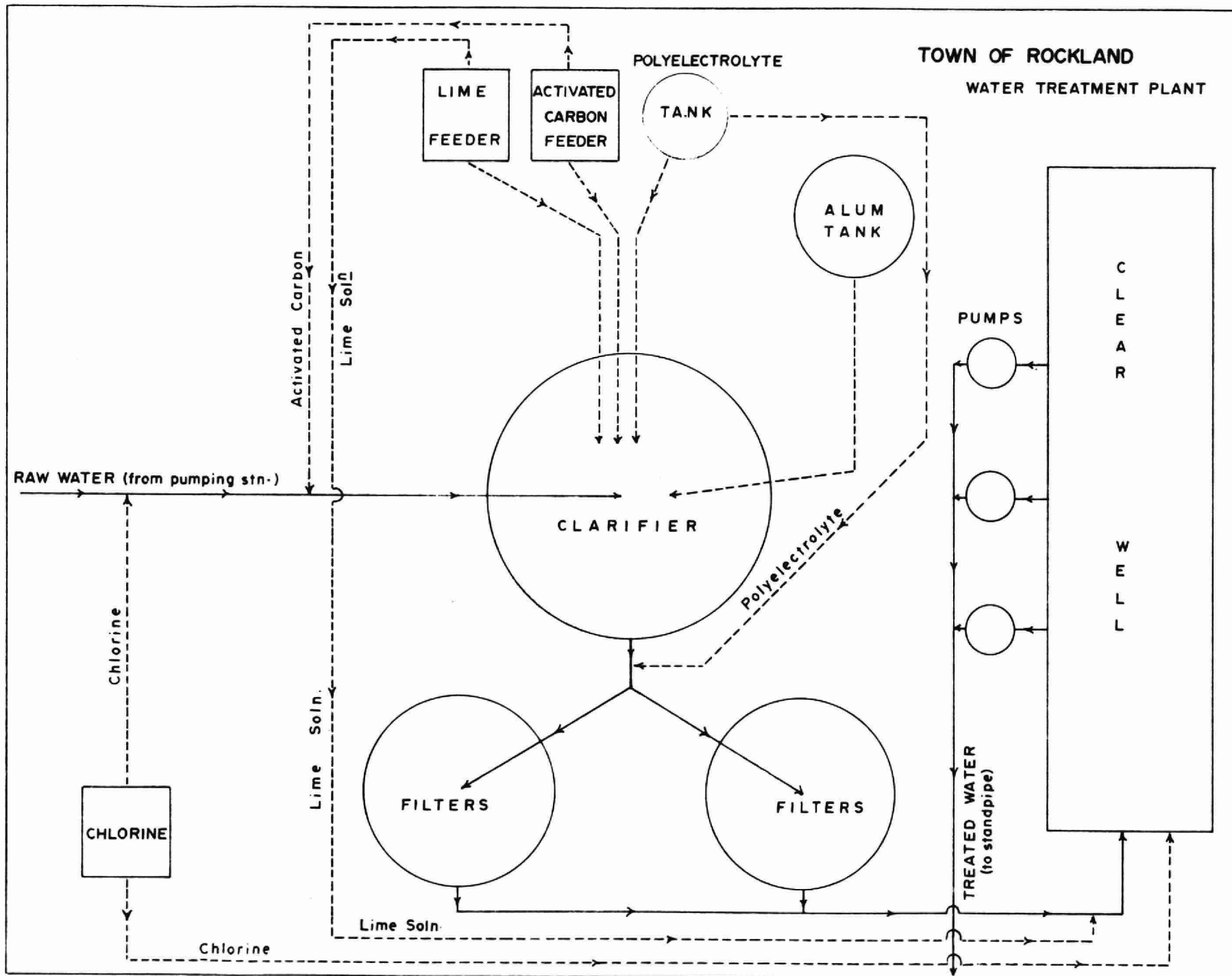
WATER TREATMENT PLANT

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WATER POLLUTION CONTROL PLANT

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DESIGN DATA

Project	Town of Rockland WTP
Project No.	5-0052-67
Design Capacity	0.80 MIGD
Raw Water Source	Ottawa River

LOW LIFT P. S.

Pump #1 200 Igpm @ 42' TDH (2 stg)
Pump #2 400 Igpm @ 42' TDH (2 stg)
Pump #3 600 Igpm @ 42' TDH (1 stg)

COAGULATION & SEDIMENTATION

Type: GRAVER REACTIVATOR
Size: One 32' dia x 13' depth
Upflow rate: 0.76 Igpm/sq. ft.
Detention: 112 min.

FILTERS

Type: GRAVER MONOVALVE (2 compartment)
Size: Two 12' dia x 10'-6"
Media: Top layer 12" of #1 Anthrafilt
Lower layer 12" of 0.45 mm torpedo sand
Filter
Rate: 2.5 gpm/sq. ft.

HIGH LIFT PUMPS

Two Crane Deming 350 Igpm @ 176' TDH
One Crane Deming 600 Igpm @ 200' TDH

STANDBY POWER

Deutz Model F86413 Diesel generator

'73 Review

GENERAL

This was the second full year of operation of the Rockland Water Treatment Plant. During the year a recirculator and two compressors were replaced. There was a minor flood in the low lift pumping station, as the river water rose to 8.5 inches above floor level.

All other repairs experienced at the project in 1973 were of a minor nature.

The project experienced maximum daily flows in July, August and September in excess of the maximum daily allowable. This problem was a result of several water leaks in the distribution system. The town rectified this problem by repairing the broken watermain.

PLANT PERFORMANCE AND TREATMENT DATA

The Rockland Water Treatment Works pumped 224.92 million gallons in 1973. The average daily flow was 0.62 million gallons.

A total of 1144 pounds of Seperan, 20,600 pounds of lime and 11,645 pounds of alum was used to aid the effectiveness of filtration of raw water, and a total amount of 7,748 pounds of chlorine was used to disinfect the treated water before pumping it into the distribution system.

The average raw water turbidity and colour were 8.3 FTU and 44 apparent units respectively.

The average treated water turbidity and colour were .09 FTU and less than 5 apparent units respectively. This is a very acceptable treated water quality.

PLANT LOADING

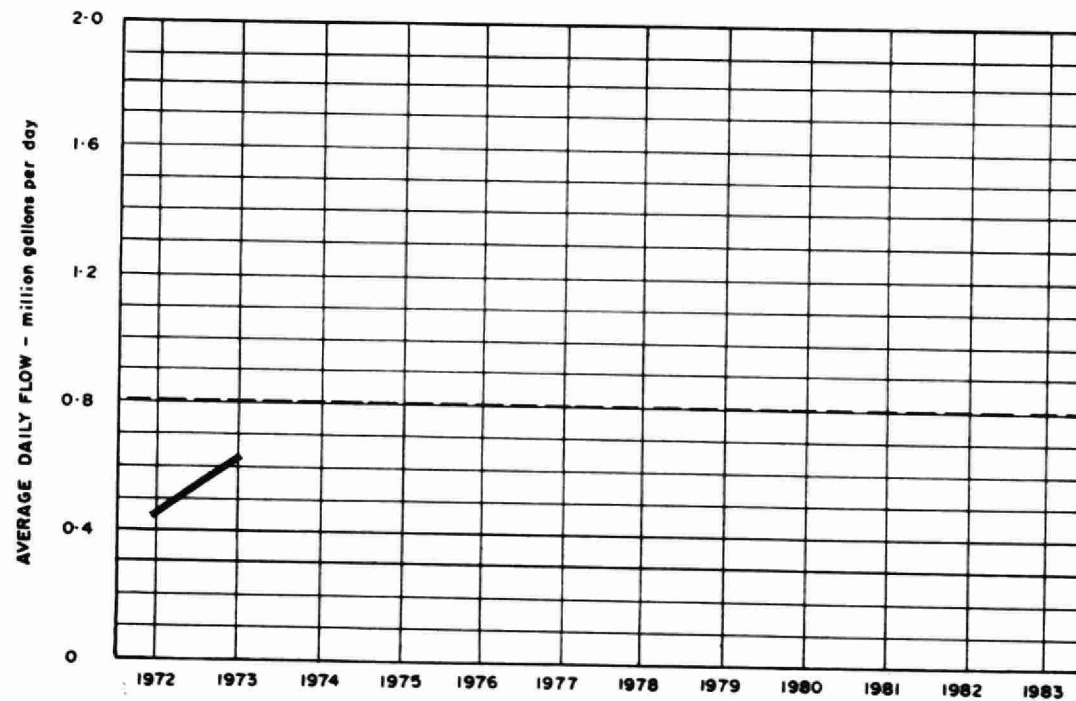
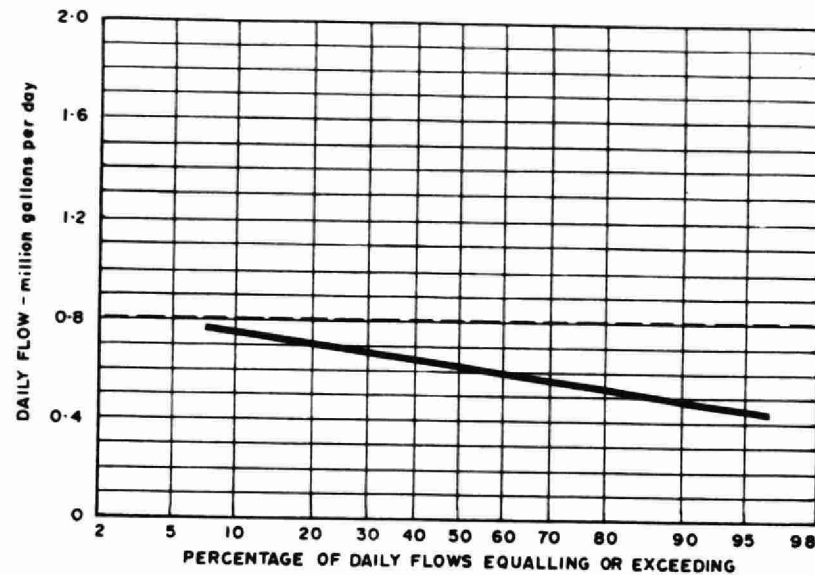
Flows during 1973 averaged 77.5 percent of maximum plant capacity. The maximum day's flow was 11 percent above the maximum plant capacity.

CONCLUSIONS

The project was operated very satisfactorily during 1973 as can be seen in the Treatment Data Section.

The plant Chief Operator, Mr. Harvey Leroux, and his operator, Mr. Henrie are to be commended for their high standards of operation, efficiency and maintenance.

PROCESS DATA FLOWS



DESIGN CAPACITY - - - - -

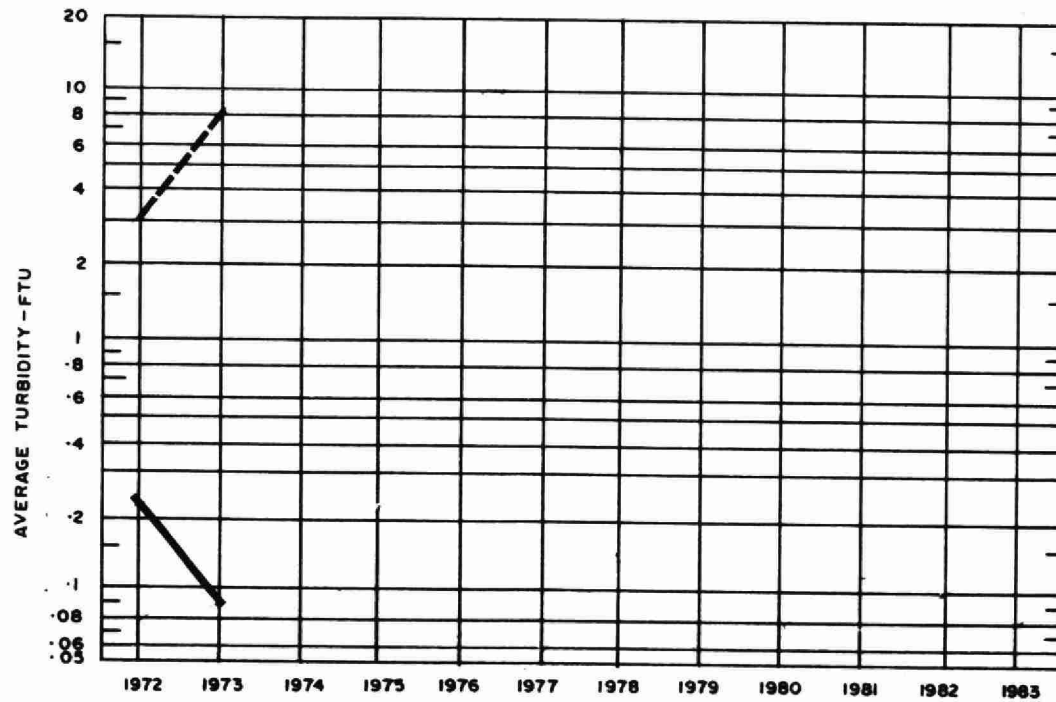
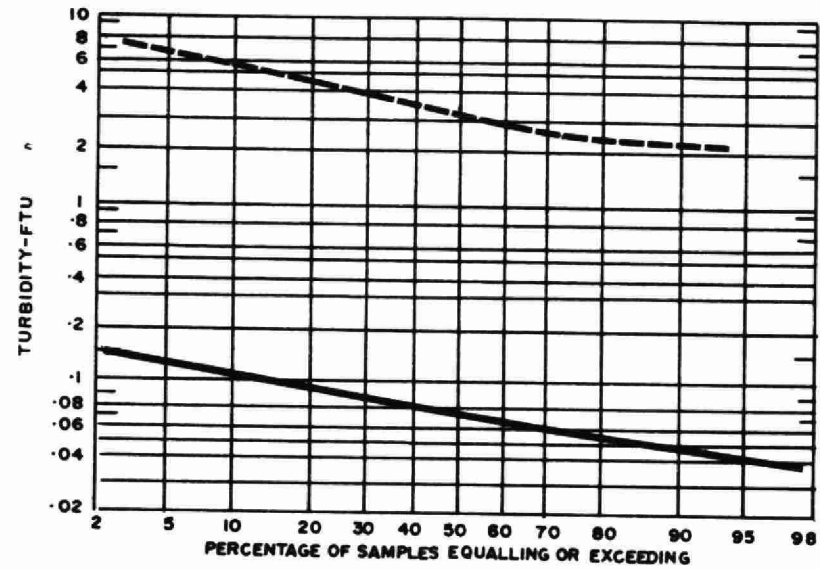
PLANT PERFORMANCE

MONTH	FLOWS				RAW WATER		TREATED WATER					
	TOTAL PLANT OUTPUT million gallons	AVERAGE DAILY FLOW million gallons	MAXIMUM DAY'S FLOW million gallons	MAXIMUM RATE mgd	TURBIDITY (AVERAGE) FTU	COLOUR (AVERAGE) App. units	TURBIDITY		COLOUR		TEMPERATURE	
							AVERAGE FTU	MAXIMUM FTU	AVERAGE App. units	MAXIMUM App. units	AVERAGE ° F	MAXIMUM ° F
JAN	17.11	0.52	0.63			37	0.08	0.65	<5	<5	35	38
FEB	17.37	0.62	0.65			34	0.05	0.17			35	42
MAR	18.24	0.59	0.64			60	0.05	0.07	<5	<5	35	36
APR	15.49	0.52	0.69		16.0	65	0.22	0.40	<5	<5	40	49
MAY	19.69	0.63	0.68			60	0.07	0.10	<5	<5	51	59
JUNE	20.05	0.67	0.75			51	0.06	0.10	<5	<5	64	69
JULY	23.01	0.74	0.90		6.0	35	0.14	1.50	<5	<5	72	75
AUG	22.79	0.73	0.88			44	0.06	1.00	<5	<5	72	76
SEPT	20.08	0.67	0.87			35	0.07	0.09	<5	<5	66	76
OCT	19.55	0.63	0.74		2.8	32	0.12	1.20	<5	<5	56	60
NOV	16.33	0.54	0.58			40	0.10	0.60	<5	<5	42	50
DEC	15.21	0.49	0.53			36	0.08	0.13	<5	<5	35	39
TOTAL	224.92											
AVG.		0.62	MAXIMUM 0.90	MAXIMUM	8.3	44	0.09	MAXIMUM 1.50	<5	MAXIMUM <5	50	MAXIMUM 76

CHLORINATION and DISINFECTION

MONTH	RAW WATER					PLANT EFFLUENT		DISTRIBUTION SYSTEM		CHLORINATION			
	NUMBER OF SAMPLES HAVING TOTAL COLIFORM ORGANISMS PER 100 ml OF					NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	TOTAL AMOUNT OF CHLORINE USED pounds	DOSAGE		RESIDUAL IN PLANT EFFLUENT mg/l
	0	1 - 3	4 - 32	33 - 320	> 320						PRE - mg/l	POST - mg/l	
JAN	0	0	0	0	4	5	0	12	0	768	1.9	0.8	0.4
FEB	0	0	0	3	2	4	0	15	0	441	1.9	0.6	0.5
MAR	0	0	0	0	4	4	0	12	0	496	2.0	0.7	0.5
APR	0	0	0	2	4	8	0	24	0	529	2.7	0.7	0.7
MAY	0	0	0	1	1	2	0	6	1	671	2.8	0.6	0.5
JUNE	0	0	0	0	4	4	0	12	0	681	2.4	0.7	0.5
JULY	0	0	0	1	3	4	0	10	0	831	2.8	0.8	0.5
AUG	0	0	0	0	5	5	0	10	0	833	2.9	0.8	0.5
SEPT	0	0	0	0	4	4	0	8	1	757	3.0	0.8	0.5
OCT	0	0	0	1	2	2	0	7	2	807	3.2	0.9	0.7
NOV	0	0	0	0	4	4	0	8	0	659	2.9	1.1	0.9
DEC	0	0	0	1	2	3	0	6	2	575	2.8	0.9	0.6
TOTAL	0	0	0	9	39	49	0	124	6	7748			
AVG.	650 (NOTE - Average shown is the GEOMETRIC MEAN)									21 pounds per day	2.6	0.8	0.6

TURBIDITY



PLANT INFLUENT -----
PLANT EFFLUENT —————

TREATMENT DATA

MONTH	CHEMICALS USED					
	S E P A R A N		L I M E		A L U M	
	AMOUNT pounds	DOSAGE m g / l	AMOUNT 10 ³ pounds	DOSAGE m g / l	AMOUNT pounds	DOSAGE m g / l
JAN	187	1.1	2.1	12.3	970	5.7
FEB	165	0.9	1.9	10.9	880	5.1
MAR	82	0.4	2.3	12.6	1045	5.7
APR	90	0.6	2.1	13.6	1050	6.8
MAY	90	0.5	2.6	13.2	960	4.9
JUNE	80	0.4	2.1	10.5	1000	5.0
JULY	90	0.4	1.7	7.2	1095	4.8
AUG	70	0.3	1.1	4.6	1045	4.6
SEPT	70	0.3			980	4.9
OCT	50	0.3			930	4.8
NOV	70	0.4	1.7	10.4	780	4.8
DEC	100	0.7	3.0	19.4	910	6.0
TOTAL	1144		20.6		11645	
AVG.	95	0.5	2.1	11.0	970	5.2

WATER QUALITY

PROPERTY	RAW WATER				TREATED WATER				DESIRABLE STANDARDS
	NUMBER OF SAMPLES	AVERAGE	MAXIMUM	MINIMUM	NUMBER OF SAMPLES	AVERAGE	MAXIMUM	MINIMUM	
HARDNESS in mg/l as CaCO_3	4	47	56	34	5	103	266	52	80 - 100
ALKALINITY in mg/l as CaCO_3	4	31	44	22	5	79	257	4	30 - 100
IRON in mg/l Fe	4	70	1.30	0.35	5	<0.05	<0.05	<0.05	Less than 0.3
CHLORIDE in mg/l Cl^-	4	4	6	3	5	44	191	4	Less than 250
pH in pH units	5	7.5	7.8	6.9	6	7.4	10.3	6.0	7.0 - 8.5
AMMONIA in mg/l as N	4	0.06	0.14	0.01	5	<0.03	0.07	<0.01	Less than 0.5
TOTAL KJELDAHL NITROGEN in mg/l as N	4	0.37	0.43	0.30	5	0.25	0.43	0.10	Less than 1.
NITRITE in mg/l as N	1	0.142	0.142	0.142	1	0.105	0.105	0.105	
CALCIUM in mg/l Ca	3	11	17	7	4	27	68	8	
COPPER in mg/l Cu	1	0.15	0.15	0.15	1	0.09	0.09	0.09	
CONDUCTIVITY in micromhos per cm^3	1	68	68	68	1	85	85	85	



— WATER POLLUTION CONTROL PLANT —

'73 Review

GENERAL

This system consists of three underground pumping stations, forcemain, and a 20-acre lagoon.

The Ministry of the Environment acquired the operation of number three sewage pumping station from the Town of Rockland in the Fall of 1973.

All repairs experienced at the project in 1973 were of a minor nature.

EXPENDITURES

The operating costs incurred by the Ministry of the Environment were \$8,679.15. The cost of treating one million gallons was \$202.83.

PLANT PERFORMANCE

A total of 42.79 million gallons of sewage was pumped to the lagoon during 1973, representing an average flow of .120 million gallons per day. It should be noted that these are estimated flows taken from a time totalizer reading that records the length of time the pump is in operation and does not allow for errors that could be caused due to a partially plugged pump.

The lagoon was operating at 80 percent of its hydraulic capacity during 1973.

PLANT LOADINGS

The average influent BOD and suspended solids concentrations were 67 mg/l and 76 mg/l respectively. The effluent BOD and suspended solids concentrations were 10 mg/l and 12 mg/l respectively, representing a BOD reduction of 85 percent and suspended solids reduction of 84 percent.

During this period, the average loading in pounds BOD per acre per day was 15 percent of design loading.

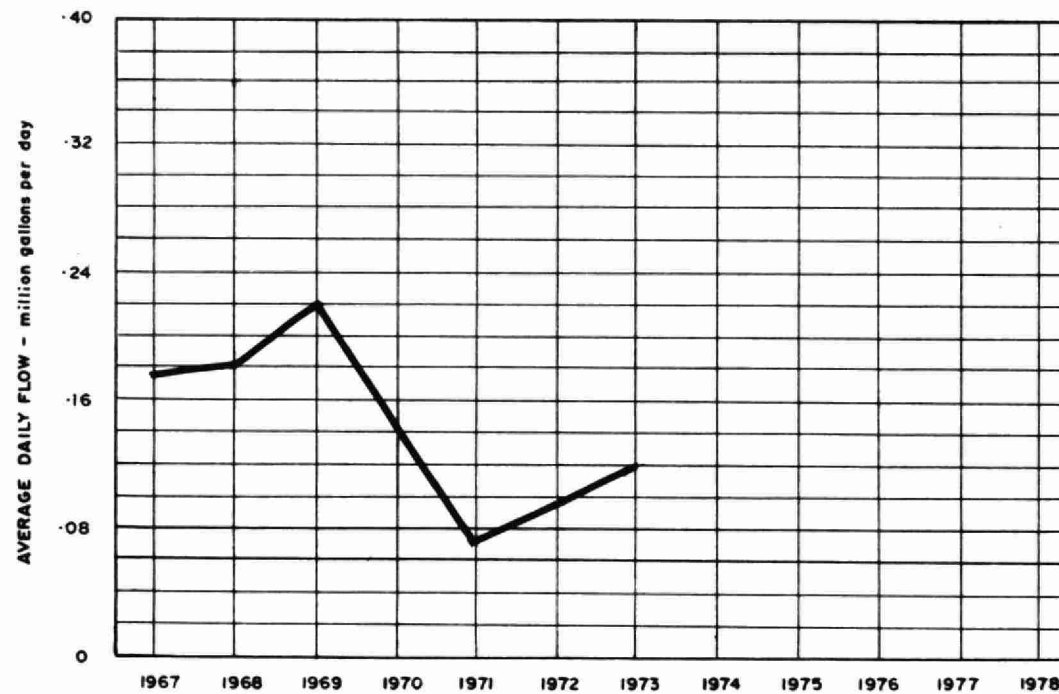
CONCLUSIONS

The operation and maintenance of this system has been very satisfactory in 1973. The plant has continued to operate very efficiently and produce an effluent well within Ministry of Environment requirements.

OPERATING EXPENDITURES

SALARIES AND WAGES	\$	<u>5287</u>
EMPLOYEE BENEFITS		<u>394</u>
TRANSPORTATION & COMMUNICATIONS		<u>515</u>
SERVICES		<u>285</u>
SUPPLIES AND EQUIPMENT		<u>2198</u>
ACQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		<u>0</u>
TRANSFER PAYMENTS		<u>0</u>
OTHER TRANSACTIONS		<u>0</u>
TOTAL	\$	<u>8679</u>

PROCESS DATA FLOWS



PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND			SUSPENDED SOLIDS			PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	LOADING	INFLUENT	EFFLUENT		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	pounds/acre/day	mg/l	mg/l		mg/l P	mg/l P
JAN	3.50	0.113		32	8	2	50	10		4.1	3.7
FEB	2.93	0.104		30		2	80			3.4	
MAR	4.96	0.160		49	14	2	57	15		3.8	4.9
APR	3.93	0.131		20	11	1	75	10		2.3	2.2
MAY	4.03	0.130		38		2	42			3.4	
JUNE	3.41	0.114		68			115			3.9	
JULY	2.80	0.090		53		2	45			3.5	
AUG	2.98	0.096		10		5	30			2.8	
SEPT	2.89	0.096					35	20		2.9	3.2
OCT	2.78	0.090		51	9	2	125	10		3.0	1.8
NOV	2.62	0.087		280	10	12	155	10		1.2	1.4
DEC	5.96	0.192		92	8		92	10		3.7	3.2
TOTAL	42.79	-	-	-	-		-	-		-	-
AVG.		0.120	MAXIMUM	67	10	3	76	12		3.0	2.9
No. of Samples	-	-	-	21	6		23	7		23	7

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